BGP Flow Specification – V2?
Time to start

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(updated from June 27, 2016)

4 years to get here

- 2016 WG decided - RFC5575-bis then v2
- 2020 Existing Maturing and Upcoming Work
- Informed Call for presentations for April 8th , 2020
- Flow-specification revision
  - 2016 idea
  - 2020 idea discussion
- Do We need other discussions?
  - Large Community
  - Deprecate AS-Sets

Flow Spec (RFC5575) Review

RFC 5575 summary

- NLRI
  - For SAFI 133: IPv4 (AFI=1), IPv6 (AFI=2), L2VPN AFI=25)
  - For SAFI 134: IPv4 (AFI=1), IPv6 (AFI=2), L2VPN (AFI=25)
- Validation
  - Originator of flow spec = originator of best-match unicast route for destination embedded in NLRI,
  - No more specific unicast routes, when compared with Flow destination prefix, that have been received from different neighbor AS
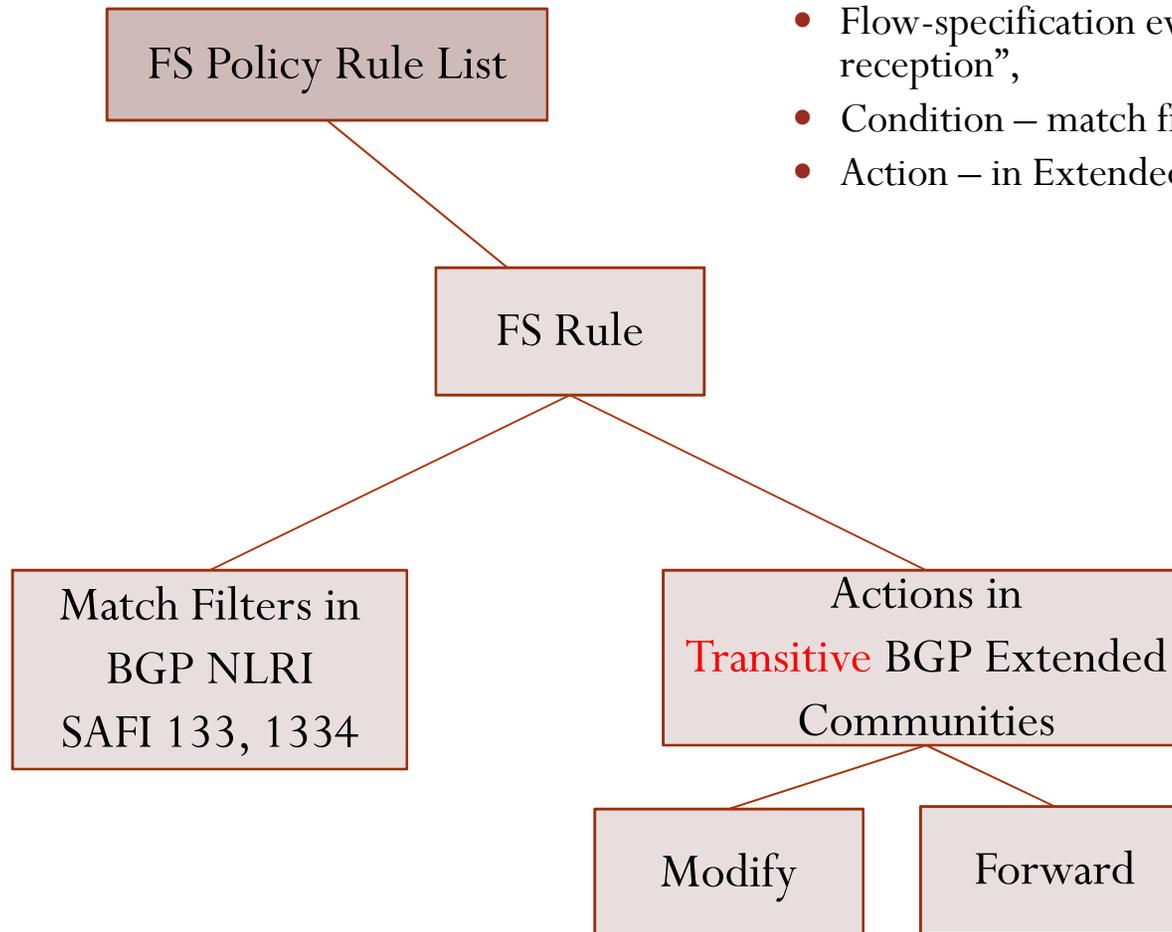
Problems with RFC5575

- No user-based ordering for filters or actions
- **Security could be**
  - Added to by BGPSEC or ROA
  - Could be lessened within a single AS [draft-ietf-idr-flowspec-oid]

Flow Specification Policy

- **ECA = Event –Condition - Action**
  - Flow-specification event = "packet reception",
  - Condition – match filters in NLRI
  - Action – in Extended communities

FS Policy Rule List

FS Rule

Match Filters in
BGP NLRI
SAFI 133, 1334

Actions in
Transitive BGP Extended
Communities

Modify

Forward

RFC5575-bis Fixes

- flowspec-nlri – encoding replaces opaque-key
  - Defines + uses new comparison bits (section 4.2.2.1)
  - Match = All of component bits
- Traffic filtering extended communities
  - All RFC5575 become Transitive extended communities
  - Traffic-rate-packets added
- Security section updated
- Draft-ietf-idr-flow-spec-v6
  - In WG last call – no comments
  - IESG requires for RFC5575bis to complete

Mature Specifications

- Draft-ietf-idr-bgp-flowspec-oid-11
    - Within AS allows centralized flow-spec filtering
    - Needed by operator
    - List Discussion: Problems putting this in RFC5575bis (?)
- draft-ietf-idr-flowspec-nv03-08 – adds tunnel filters
- draft-ietf-idr-flowspec-l2vpn -13 – adds L2vpn filters
- draft-ietf-idr-flowspec-interface-05.txt – interface scope
    - RT + group identifier for identifying flow-spec filter application
- draft-ietf-idr-flowspec-path-redirect-10.txt
    - Action: indirect based on type, opaque-ID and table
    - Possible types: Local (0), MPLS-SR (3, 4), tunnel-id (5)

Less Mature and Pending

Adopted

- draft-ietf-idr-mpls-flowspec-match
- draft-ietf-idr-mpls-flowspec-label

Adoption Request

- draft-li-idr-flowspec-srv6

In the pipeline

- draft-wang-idr-flowspec-dip-origin-as-filter-02
- draft-liu-idr-flowspec-ifit-04.txt

Using Community Atoms

- draft-ietf-idr-rpd

Flow-Spec next generation (FS-ng) Discussion

- What do operators need now for flow-specification?
  Categories: Deployed (needing RFC), Implemented, Needed

- RFC5575bis
  - Should there be any RFC5575bis add on NLRI?
  - Problems if add Add

- What problems need to be solved?
  - NLRI flexible coding, Large communities (?)
  - NLRI filter expansion – tunnels, l2vpn, mpls,
  - RT refinement (RT+interface group, …)
  - New Forwarding actions (path-redirect, SR-redirect),
  - Security

Dependencies???

IDR Work

- Large communities?

- Deprecate AS-Sets / Confed-Sets

Grow Work?

- Any drafts?

Draft-hares-idr-flowspec-v2-00.txt

2016 ideas on flow-specification v2

June 27, 2016

New filter match with order

```
+------------------------+
|length (2 octets)       |
+------------------------+
| sub-TLVs (variable)    |
| +==================+ |
| | order (2 octets)   | |
| +------------------+ |
| | type (2 octets)    | |
| +------------------+ |
| | length (2 octets)  | |
| +------------------+ |
| | value (variable)   | |
| |[multiples of       | |
| | 2 octets]          | |
| +==================+ |
+------------------------+
```

Figure 16 - NRLI revision

New Action atom for BGP Wide Communities

```
+--------------------------+
| order (2 octets)         |
+--------------------------+
| Action type (2 octets)   |
+--------------------------+
| Action length (2 octets) |
+--------------------------+
| Action Values (variable) |
| (multiples of 2 octets)  |
+--------------------------+
```

Wide Community Atom

figure 17

BGP-FS Atom added to

Wide Communities container (type 1) or

 BGP Flow Specification container (type 2) (see below)

BGP-FS Container type 2

```
+-------------------------------+
| Source AS Number  (4 octets)|
+-------------------------------+
| list of atoms (variable)    |
+-------------------------------+
```